

## **Status Report for August 2004**

### **Tropospheric Model**

- Numerous minor modifications have been made to the code to correct and update the chemical mechanism and emission inputs (Bryan Duncan and Bigyani Das).
- A single-processor version of the tropospheric model that runs on a Linux machine is now available (Jules Kouatchou).
- A 3-hr relaxation time to well-mixed conditions in the PBL was chosen for use with the GISS met fields (Michael Prather and Bigyani Das).
- Additional diagnostics are being incorporated to produce 3-dimensional tendencies for specific species (chosen in a namelist file). Similarly, three-dimensional production and loss of chosen species/families will also be included. These will be monthly-averaged. (Bryan Duncan, Jules Kouatchou)
- 'Version 1' of this code is essentially done. New simulations with this version and all met fields (DAO, CCM3, and GISS) will be rerun shortly (Bryan Duncan and Bigyani Das).
- The simple tracer experiments (fossil fuel CO, biomass burning CO, CH<sub>3</sub>I, and fossil fuel CO<sub>2</sub>) are being redone with the new tropospheric code (Bigyani Das).
- Aerosol radiative effects are still missing from this version. Bryan is working on implementing the effect of aerosols. We expect this to be Version 1.X by late summer/early fall. GMI-Trop will be rerun again with this version.

### **Aerosol Model**

- We have completed 2-year integrations of the aerosol model using DAO, CCM3, and GISS met fields (Michigan chemical inputs). Monthly averaged outputs are available for analysis (Bigyani Das)
- Xiaohong Liu has delivered a new microphysical code to be added to the aerosol model.
- Xiaohong Liu has delivered new dust emission files. The DAO, CCM3, and GISS simulations will be rerun with these files.

### **Stratospheric Model**

- The model is now running at 2x2.5 horizontal resolution. The chemistry has been updated to JPL2002. The model has been modified to include the effects of the solar cycle and the production of NO<sub>x</sub> from galactic cosmic rays (Steve Steenrod).
- The 'repeating warm year' hindcast simulation has begun. We are sorting through minor chemical 'snags' but expect to be running at full speed soon. (Steve Steenrod and Susan Strahan).

## **Strat-trop Combined Model**

- Jules Kouatchou has compiled the model. There are problems in the chemical mechanism; Jules and David Considine are working on them.
- Hamid is working on the implementation of 'Fast-JX', Michael Prather's new version of Fast-J2 that is appropriate for stratosphere and troposphere.

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## **New Met Fields**

- We have compiled a list of what we believe are all the met fields we require for tropospheric, aerosol, and stratospheric simulations (Jose and David).
- The GMAO will do a 5-yr integration of the FVGCM saving our required outputs. We expect new met fields by September.
- We have EC forecast fields for 2000 on a spectral grid. We are working with Prather on regridding to rectilinear coordinates.
- There is no existing FVDAS simulation for 2000 that saved all the fields we require. We are investigating whether this period could be re-integrated for us.

## **Miscellaneous**

### Data Access

The entire GMI archive is now accessible through anonymous ftp access. The hostname is [dirac.gsfc.nasa.gov](ftp://dirac.gsfc.nasa.gov) and the archive directory is [/pub/gmitdata](ftp://dirac.gsfc.nasa.gov/pub/gmitdata)

### Model documentation

A draft for the user's manual for the GMI model has been completed and is being reviewed internally. We expect that a final document will be included in the GMI web site within the next month (Jules Kouatchou).

### Software

An IDL-based program has been supplied by Peter Connell (LLNL) and modified by Chris Readinger (GSFC). This program allows automatic generation of the subroutines needed to utilize SMVGEAR-II for an arbitrary chemical mechanism.

### Standard output

Chris Readinger has created a series of python scripts that generate a set of diagnostic plots of model constituent output. We are using these scripts to perform first-order evaluations of model output and identify the effects of model modifications. Although the scripts and diagnostic plots are being used in-house, both can be made available to GMI members if there is interest; contact Susan Strahan.

### Publications

The Considine et al. paper, titled “Sensitivity of GMI model predictions of Antarctic ozone recovery to input meteorological fields” was published 3 Aug 2004 in JGR Atmospheres. The Douglass et al. paper on chemical reservoirs should appear in JGR Atmospheres within the next month or 2.

### Next Meeting

The next Science Team meeting will be held November 17-19, 2004; the location will be announced soon. The steering committee will meet in Maryland on Monday, October 18.